I CLAIM AS MY INVENTION:

1. An x-ray tube comprising:

a vacuum housing;

a stationary cathode disposed in said vacuum housing;

an axle fixedly attached to said vacuum housing and proceeding through an interior of said vacuum housing;

a ring projection fixed to said axle, and having an outer surface;

a rotating anode formed by a hollow body surrounding said axle and having an interior, having an inner surface, in which said ring projection is disposed with a gap existing between said inner surface of said interior of said hollow body and said outer surface of said ring projection; and

a liquid metal filling said gap forming with said gap a liquid-metal fluid bearing for said rotating anode, allowing rotation of said hollow body around said axle.

2. An x-ray tube as claimed in claim 1 wherein said hollow body has body walls disposed adjacent said axle, and wherein said gap filled with said liquid metal continues between said body walls and said axle.

3. An x-ray tube as claimed in claim 2 comprising at least one sleeve connected to one of said body walls and concentrically surrounding said axle with a radial spacing from said axle.

4. An x-ray tube as claimed in claim 3 wherein said gap filled with said liquid metal continues into said radial spacing between said at least one sleeve and said axle.

5. An x-ray tube as claimed in claim 3 comprising a stator mounted at an exterior of said vacuum housing, and wherein said sleeve forms a rotor, said stator and said rotor interacting to form an electromotor for driving said rotating anode.

6. An x-ray tube as claimed in claim 1 wherein said hollow body is annular and has a substantially U-shaped cross section.

7. An x-ray tube as claimed in claim 1 wherein said axle passes completely through said rotating anode.

8. An x-ray tube as claimed in claim 1 further comprising a channel for coolant proceeding in said axle and in said ring projection.

9. An x-ray tube as claimed in claim 8 wherein said channel in said ring projection is disposed next to said outer surface of said ring projection.

10. An x-ray tube as claimed in claim 8 wherein said channel in said ring projection comprises a plurality of branched sub-channels.